

REMARKS

This is in response to the Office Action dated 04/08/03.

Claims 1-5, 8 and 9 are now pending in the application.

Claims 1-5, 8 and 9 are rejected under 35 U.S.C. 1 03(a) as being unpatentable over Welter (US 4,262, 726) or Iwata et al. (US 4,842,682) or Cluzel (US 5,996,662) taken in view of Oare et al. (US 51368,082), EP 335,588 to Sumitomo and GB 1,487,426 to Verbauwheide.

The Office Action states that "Welter, Iwata et al., Cluzel and Oare et al. are applied for substantially the same reasons as set forth in the last office action. As to the new requirement that the ply be at 0-5 degree and formed from a wound ribbon, neither Welter nor Cluzel indicate specifically how the ply is formed while Iwata et al. indicates that the ply "1" can be formed by winding one or more cords but it is arguably not clear whether these are wound in the form of a ribbon (although it is not clear that this would necessarily even form a materially different product). In any event, in the tire art, when forming plies that have cords oriented at essentially zero degrees, it is extremely well known and common to form these plies by winding a ribbon at a low angle with adjacent windings adjoining one another – GB ,426 and EP '588 are merely exemplary. To form the low angles plies of the primary references by winding a ribbon would therefore have been obvious and further would have provided the well known and expected benefit of avoiding the material splice (and its consequent non-uniformities as well as potential weakness) that would otherwise be required in applying a full width ply."

The Applicant respectfully disagrees with the above analysis.

US 4,262,726 to Welter discloses a single ply which is reinforced with parallel cords. However, as stated by the Office Action, Welter does not specifically indicate how the ply is formed. This is a very important feature of the present invention where the fabric underlay is claimed as "being a wound ribbon of cord-reinforced rubber wherein the ribbon is butt joined against laterally adjacent portions of the ribbon without overlapping". This feature is not shown or suggested by Welter.

U.S. 4,842,682 to Iwata discloses an underlay made of steel cords, i.e., non-expansible or hardly expansible. This is completely different from the present invention where the cords are claimed as being "made of high-modulus material selected from the group consisting of polyester, nylon, rayon, aramid and glass".

U.S. 5,996,662 to Cluzel discloses an underlay made of steel cords, i.e., non-expandible or hardly expandible. This is completely different from the present invention where the cords are claimed as being "made of high-modulus material selected from the group consisting of polyester, nylon, rayon, aramid and glass". In addition, the forming angles of the metal cables are between 15° and 35° as compared with 0° and 5° for the present invention.

U.S. 5,368,082 to Oare discloses reinforcing belts underlying the tread having cord angles from are between 17° and 27° as compared with 0° and 5° for the present invention. Also, the cords of the reinforcing belts are disclosed as steel instead of as being "made of high-modulus material selected from the group consisting of polyester, nylon, rayon, aramid and glass". In addition, there is no mention or suggestion of a very important feature of the present invention where the fabric underlay is claimed as "being a wound ribbon of cord-reinforced rubber wherein the ribbon is butt joined against laterally adjacent portions of the ribbon without overlapping".

Accordingly, if one skilled in the art were to modify Welter or Iwata et al. or Cluzel with the teachings of Oare et al., the resulting structure would still not include an underlay deployed between the belt structure and the radial ply structure that:

- a) comprises high-modulus reinforcing cords being aligned at a cord angle of about 0 degrees to 5 degrees with respect to the equatorial plane of the tire,
- b) is a wound ribbon of cord-reinforced rubber wherein the ribbon is butt joined against laterally adjacent portions of the ribbon without overlapping;
- c) the high-modulus reinforcing cords of the fabric underlay are made of high-modulus material selected from the group consisting of polyester, nylon, rayon, aramid and glass;
- d) is deployed between the belt structure and the radial ply structure for supporting tensile loads during both normal-inflated and runflat operating conditions.

EP 335,588 ('588) to Sumitomo discloses a tire with belts 6 formed of two plies of steel cords and an "outer" band cord 7 wound outside of the belts between the belts and the tread. This is completely different from the present invention which is limited to "a fabric underlay deployed between the belt structure and the radial ply structure for supporting tensile loads during both normal-inflated and runflat operating conditions". The '588 patent is not directed to a runflat tire and therefore does not require the underlay of the present invention.

Accordingly, if one skilled in the art were to modify Welter or Iwata et al. or Cluzel with the teachings of Oare et al. and/or the '588 patent, the resulting structure would still not include an underlay deployed between the belt structure and the radial ply structure that:

- a) comprises high-modulus reinforcing cords being aligned at a cord angle of about 0 degrees to 5 degrees with respect to the equatorial plane of the tire,
- b) is a wound ribbon of cord-reinforced rubber wherein the ribbon is butt joined against laterally adjacent portions of the ribbon without overlapping;
- c) the high-modulus reinforcing cords of the fabric underlay are made of high-modulus material selected from the group consisting of polyester, nylon, rayon, aramid and glass; and
- d) is deployed between the belt structure and the radial ply structure for supporting tensile loads during both normal-inflated and runflat operating conditions.

GB 1,487,426 ('426) to Verbauwheide discloses a reinforcing layer in a tire between the carcass and the tread. However, there is no teaching or suggestion of providing a runflat tire comprising a tread, two insert reinforced sidewalls, a radial ply structure, a belt structure located between the tread and the radial ply structure, and "a fabric underlay deployed between the belt structure and the radial ply structure for supporting tensile loads during both normal-inflated and runflat operating conditions".

As before, if one skilled in the art were to modify Welter or Iwata et al. or Cluzel with the teachings of Oare et al. and/or the '588 patent, and/or the '426 patent, the resulting structure would still not include an underlay deployed between the belt structure and the radial ply structure that:

- a) comprises high-modulus reinforcing cords being aligned at a cord angle of about 0 degrees to 5 degrees with respect to the equatorial plane of the tire,
- b) is a wound ribbon of cord-reinforced rubber wherein the ribbon is butt joined against laterally adjacent portions of the ribbon without overlapping;
- c) the high-modulus reinforcing cords of the fabric underlay are made of high-modulus material selected from the group consisting of polyester, nylon, rayon, aramid and glass; and
- d) is deployed between the belt structure and the radial ply structure for supporting tensile loads during both normal-inflated and runflat operating conditions.

Claim 1 is allowable because the cited prior art taken alone or in combination doesn't teach or suggest include an underlay deployed between the belt structure and the radial ply structure that:

- a) comprises high-modulus reinforcing cords being aligned at a cord angle of about 0 degrees to 5 degrees with respect to the equatorial plane of the tire,
- b) is a wound ribbon of cord-reinforced rubber wherein the ribbon is butt joined against laterally adjacent portions of the ribbon without overlapping;
- c) the high-modulus reinforcing cords of the fabric underlay are made of high-modulus material selected from the group consisting of polyester, nylon, rayon, aramid and glass; and
- d) is deployed between the belt structure and the radial ply structure for supporting tensile loads during both normal-inflated and runflat operating conditions.

Accordingly, claim 1 should be deemed allowable.

Claim 2 is dependent upon claim 1 and sets forth that "the fabric underlay comprises opposing marginal edges which extend laterally beyond lateral edges of the belt structure." Since none of the references taken alone or in combination teach or suggest the underlay of claim 1, claim 2 should also be allowable.

Claim 4 is dependent upon claim 1 and sets forth that " the fabric underlay is located on the tensile side of the neutral bending axis of the combined belt structure, fabric underlay and ply structure." Since none of the references taken alone or in combination teach or suggest the underlay of claim 1, claim 4 should also be allowable.

Claim 5 is dependent upon claim 4 and sets forth that " the cords of the fabric underlay are circumferentially oriented and are prestressed in tension during manufacturing of the tire." Since none of the references taken alone or in combination teach or suggest the underlay of claim 1 or claim 4, claim 5 should also be allowable.

Claim 8 is dependent upon claim 1 and sets forth that " a fabric overlay is disposed between the belt structure and the tread." Since none of the references taken alone or in combination teach or suggest the underlay of claim 1, claim 8 should also be allowable.

Claim 9 is dependent upon claim 1 and sets forth that "at least one of the radial plies is reinforced by essentially inextensible cords." Since none of the references taken alone or in combination teach or suggest the underlay of claim 1, claim 9 should also be allowable.

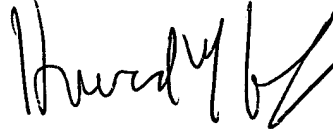
Conclusion

The claims should be allowed.

No new matter is entered by this Amendment.

Applicant has made a diligent effort to amend the claims of this application so that they define novel structure which is non-obvious. If there are still some issues to be resolved, the Examiner is invited to contact the undersigned.

Respectfully submitted,



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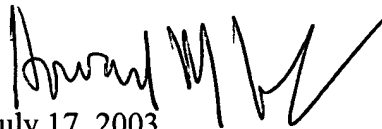
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